



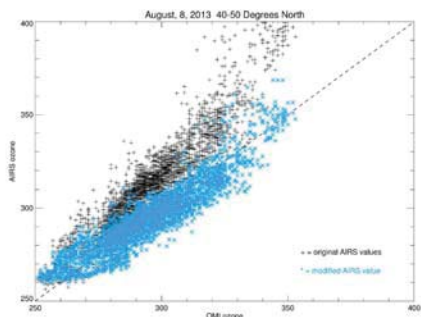
# Merging of OMI and AIRS Ozone Data

Gordon Labow<sup>1</sup>, Brad Fisher<sup>1</sup>, Joel Susskind<sup>2</sup>

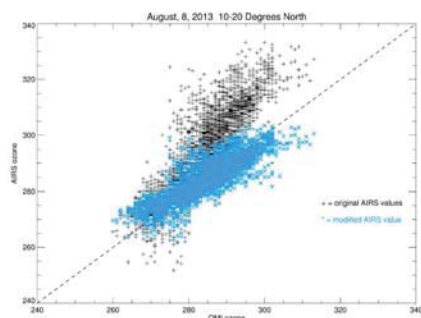
1) SSAI [gordon.j.labow@nasa.gov](mailto:gordon.j.labow@nasa.gov) 2) NASA GSFC



## How the merging is done:

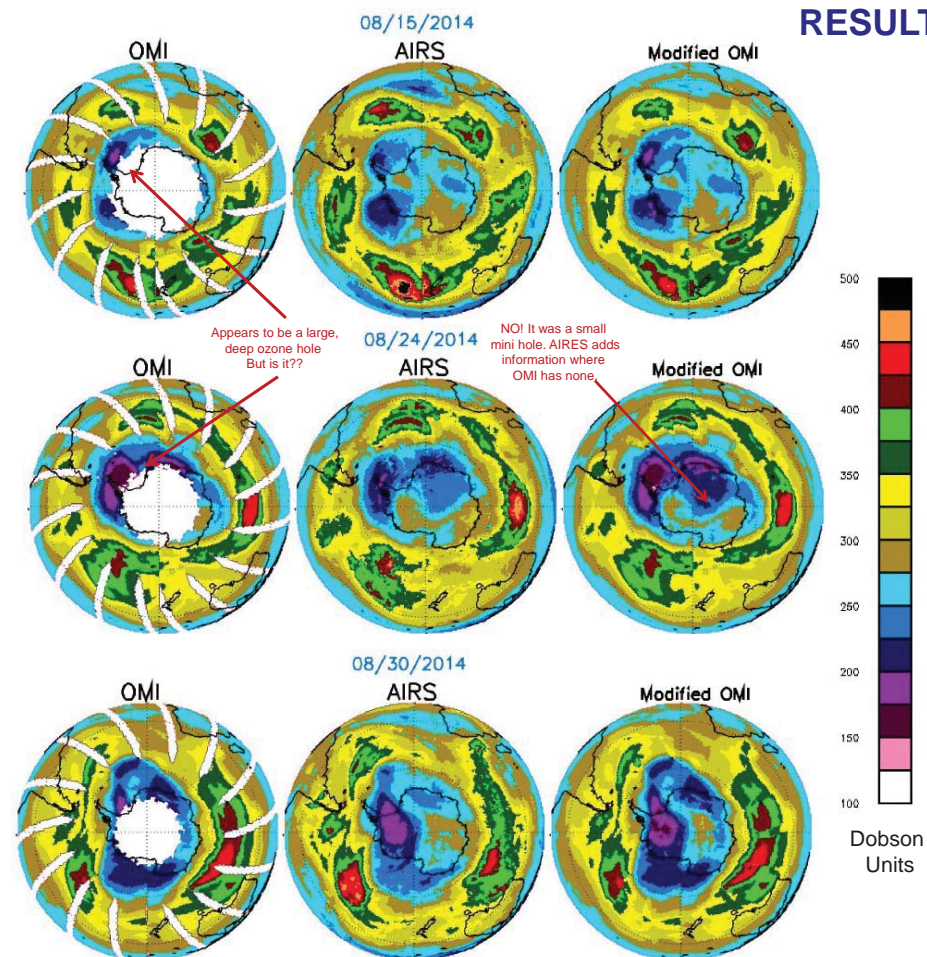


The OMI and AIRS data are compared for 10 degree latitude bands and regression coefficients are calculated for each band and applied to the AIRS data. Where there are no OMI measurements (e.g. polar night) coefficients are used from a time period where both instruments have data (October in S.H.)

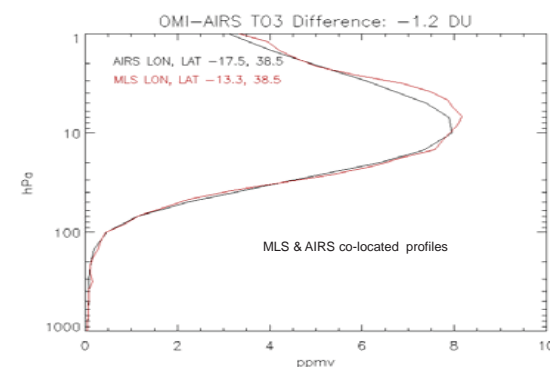


**Abstract:** The OMI Instrument measures ozone using the backscattered light in the UV part of the spectrum. In polar night there are no OMI measurements so we hope to incorporate the AIRS ozone data to fill in these missing regions. AIRS is on the Aqua platform and has been operating since May 2002. AIRS is a multi-detector array grating spectrometer containing 2378 IR channels between 650  $\text{cm}^{-1}$  and 2760  $\text{cm}^{-1}$  which measures atmospheric temperature, precipitable water, water vapor,  $\text{CO}$ ,  $\text{CH}_4$ ,  $\text{CO}_2$  and ozone profiles and column amount. It can also measure effective cloud fraction and cloud top pressure for up to two cloud layers and sea/land skin temperature. Since 2008, OMI has had part of its aperture occulted with a piece of the thermal blanket resulting in several scan positions being unusable. We hope to use the AIRS data to fill in the missing ozone values for those missing scan positions.

## RESULTS



The 2014 ozone hole.



## Conclusions:

- Using AIRS to fill in missing OMI data appears to be feasible once the biases have been removed. This is particularly useful during polar night.
- Pole-to-pole global monthly means would then be possible.
- The row anomaly missing data can be filled in.
- The AIRS processing team is currently working on a modified ozone retrieval algorithm.

## LIMITATIONS

- Validation of satellite ozone values in polar night will be extremely difficult. Ozone sondes merged with MLS data may be the only source of data for this purpose.